had reached a stage as high as had ever been recorded since the river station was established seven years ago, and the heavy rain of that night continued to augment the flood which had then reached threatening proportions. By the morning of the 25th the Maumee had reached the 24-foot stage, and large portions of the city, including what is known as the Bloomingdale, Nebraska, and Spy Run sections, were under water.

The Maumee River is formed at Fort Wayne by the St. Marys which comes from the south and the St. Joseph which comes from the north. The flood here was largely due to the great volume of water which was carried by the St. Marys River, as that stream heads south of the city where the rainfall was much heavier than it was over the headwaters of the St. Joseph River.

By the morning of the 24th it was seen that the dike which was built to protect that portion of the city known as Lakeside would not hold, and all residents of that portion who had not already vacated were ordered out, and before noon Lakeside was under water. The Maumee continued to rise until the night of the 26th when a stage of 26.1 feet was registered by the gage on the Columbia Street Bridge; this, however, was not a very accurate reading of the height of the water, as the breaking of the Lakeside Dike caused a large volume of the water of the river to pass through Lakeside rather than under the Columbia Street Bridge.

While several thousand were rendered temporarily homeless by the flood in this city, only six lives were lost as a direct result of the high water. The property loss to the city is hard to estimate at the present time, yet it is probable that the loss will not amount to more than $1,000,000, possibly much less than that figure. The greatest loss was to the thousand or more houses which were under water, and to furniture therein, much of which could not be removed in time to be saved.—W. S. PALMER, Local Forecaster, Fort Wayne, Ind.

STORMS.

Aside from the general rain storm of the 23d–27th which resulted in the floods described above, several other storms of marked severity passed over the district during the month. On the 21st one of the most destructive wind storms in recent years swept the lower Lake region, as stated before, and maximum wind velocities of 90, 86, and 84 miles per hour were reported from Buffalo, N. Y.; Detroit, Mich.; and Toledo, Ohio, respectively. At the latter station an extreme velocity of 100 miles an hour was recorded, this being the highest velocity for any one minute, while maximum velocities are based upon five-minute periods. Concerning this storm, the officials at Detroit, Mich., and Columbus, Ohio, report as follows:

Detroit, Mich.—A gale of unprecedented severity swept over southern Michigan on March 21. Buildings were razed, roofs blown off, chimneys toppled over, signs and sign boards blown down, trees broken and uprooted, overhead wires prostrated, and several lives lost as a result of the storm's fury. The total wind movement from midnight of the 20th to midnight of the 21st was 884 miles, with an hourly movement of 71 miles, 10 a. m. to 11 a. m., which with the velocity of 86 miles per hour, established the maximum record since the establishment of this station in 1871. Five deaths and scores of injured, many seriously, were reported in this vicinity, and property damage in the city is conservatively estimated at $500,000, with damages in the southern part of the State correspondingly as great. The river front was greatly damaged and the water strewn with floating débris. Telephone, telegraph, power, and trolley lines were prostrated and the wireless tower at West Grand Boulevard and the river was wrecked.

Columbus, Ohio.—Much damage was done throughout the northern part of the State by the high southwest wind of the 21st. At Cleveland the wind reached a maximum velocity of 64 miles an hour. Reports of extensive damage to trees, telephone and telegraph poles, roofs, and chimneys were received from many of the observers in the State. In Toledo several people were injured and property damaged to the extent of $15,000 to $20,000. In Cleveland the damage was estimated at $80,000. Many oil derricks were blown over in western Ohio.

Severe winds occurred at Duluth, Minn., on the 1st, 13th–14th–15th, and the 23d–24th, accompanied by snow, the maximum velocity being 54 miles an hour from the northwest on the 1st. On the 23d–24th a severe wind storm caused much damage in Chicago and Milwaukee, and in the western suburbs of the former city houses were overturned and roofs blown off.

MISCELLANEOUS.

An unusually large number of thunderstorms for the season occurred during the month, and every station reported at least one such storm, except Duluth, Minn., Grand Rapids, Mich., reporting six. The dates on which thunderstorms were recorded throughout the district were as follows: 9th, 13th, 14th, 15th, 20th, 21st, 23d, 24th, 30th, and 31st. Fog occurred with less frequency than usual, many stations observing none at all.

MARCH LAKE LEVELS.

The following data are from the report of the United States Lake Survey:

	Lake Superior.	Lakes Michigan and Huron.	Lake Erie.	Lake Ontario.
	Feet.	*Feet.*	*Feet.*	*Feet.*
Above tidewater at New York	601.54	580.16	572.44	246.71
Above or below:				
Stage of February, 1913	−0.07	+0.20	+0.05	−0.04
Stage of March, 1912	+0.11	+0.88	+1.21	+1.61
Mean stage of March last 10 years	−0.16	+0.03	+0.66	+0.91
Highest recorded stage	−0.74	−2.79	−1.25	−1.10
Lowest recorded stage	+0.88	+1.05	+1.56	+2.41
Probable change during April	0.00	+0.30	+0.60	+0.60

THE SLEET STORM IN NORTHERN NEW YORK, MARCH 25–27.

W. J. BENNETT, Local Forecaster, Canton, N. Y.

The sleet storm of March 25–27 is said to have been the worst storm of the character that has ever visited this locality. It affected a considerable area, covering the counties of St. Lawrence, Jefferson, Lewis, Franklin, and Clinton, N. Y., but the greatest damage was done in St. Lawrence County.

The weather maps of March 24–27 show rather peculiar conditions. A trough of low pressure extended from Texas to Michigan on the 24th, which drifted eastward to the Atlantic coast by the 27th. Meanwhile, several distinct centers of low pressure formed in the southwest, and moved northeastward along the trough. Temperatures were abnormally high to the east and abnormally low to the west, and temperature differences between places not far apart were in some cases very great. The precipitation area extended much farther to the west of the trough than to the east, and this was rather an unusual condition.

The above facts seem to indicate that there was a general and continuous movement of a great volume of warm, moist air from the southeast, upward and northwestward over the colder surface air coming from the northwest, and this caused an inversion of the vertical temperature gradient over a wide belt to the west of the trough. The upward moving and expanding air cooled slowly, as it was constantly receiving heat from the condensation of moisture. The cold air from the northwest warmed slowly, and where the surface temperatures were above freezing, rain fell. When the upward current had cooled to freezing and temperatures near the surface had also reached this point, the precipitation took the form of snow. Over northern New York, the surface temperature fell to freezing long before the upward current had cooled to that point, and the rain that fell froze upon all objects near the earth's surface. In connection with the long continuance of these conditions, the southern end of the

trough of low pressure swung from Texas on the 25th to the Atlantic coast on the 27th, while the northern end remained nearly stationary over New York.

In Canton, at 8 a. m. of the 25th, rain began to freeze as it fell, and this form of precipitation was practically continuous from that time until 1 p. m. of the 27th. For this period the precipitation was 1.92 inches, nearly all of which froze as solid ice upon contact with the ground or other objects. The temperature ranged between 33° and 25°. At 1 p. m. of the 27th the depth of sleet or solid ice on the ground was 1.5 inches. Ice on trees, wires, etc., was an inch or more thick. This meant about 19 ounces of ice per running foot of wire, and with such a strain great damage naturally resulted.

In the town large trees were broken and many totally ruined, while small trees were bent to the ground, and the streets were almost impassable because of fallen branches. Nearly all wires, telephone, telegraph, and electric light, in and around the village were broken down In some cases poles as well as wires were prostrated for long distances, and Canton was cut off from communication by wire with the rest of the country until April 7.

The city of Ogdensburg, from newspaper accounts, suffered severely. There were estimated to be 1,500 cords of wood in fallen trees and branches in the streets. The damage to the telephone system was probably between $15,000 and $20,000, and electric-light and telegraph companies suffered similarly. Potsdam estimated that 300 cords of wood had to be removed from the streets of that village. Damage was also great in Gouverneur and in Norwood. South of Gouverneur and north of Norwood the damage was not so great, but was still considerable as far south as Watertown and as far north as Massena.